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The Evolution and Importance of 'Rules-in-Use' and Low-Level Penalties in Village-Level Collective Action

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ABSTRACT: In many parts of sub-Saharan Africa community water points are provided through external support in the form of enhanced boreholes fitted with hand pumps. The external agency supplying the improved water source commonly provides maintenance training and assists in organising a governance plan for the water point. Despite its apparent virtues the Village-Level Operation and Maintenance model still experiences high levels of water point failures, even where the technical training and material conditions are adequate. There has been relatively little investigation of the institutional factors that may influence the cases where villages successfully maintain their shared water source infrastructure. This research investigated five villages in central Malawi where communities had maintained their water point hand pumps for periods exceeding 10 years. The results point to the importance of informal institutions giving primacy to ad-hoc 'rules-in-use' that suit the local context, and adapting forms of free-rider sanctions that are typically minor, low level and triangulated with local norms and behaviours. The findings highlight collective action that is successful through day-to-day adaption and that serves to institutionalise cooperative behaviour through appeals to norms.

KEYWORDS: Shared resources, water, institutions, collective action, rules, hand pump, Malawi

INTRODUCTION

Social institutions that govern the use of common property resources typically rely on sanctions to influence the users' behaviour. Sanctions, usually in the form of punishments of progressive severity, are seen as important disincentives to free-riding by members of a shared-resource user community. Sanctions for non-cooperation and rule breaking are integral to the ideal frameworks for collective action around common property and are considered to be crucial for the maintenance of collective action (Gibson et al., 2005).

The use of regulations and penalties is effective when the explicit benefits that accrue to the members of a resource-using community exceed the costs of their cooperation and collective action (Gibson et al., 2005). The attraction of the gains from free riding, as posited in the classic theories of Olson (1965) and Hardin (1968), must be tempered by the repercussions of explicit sanctions for rule breaking and selfishness. Furthermore, the costs of rule enforcement, monitoring and the issuing of any penalties must typically be worth incurring for the individuals who choose to enforce rules. Enforcing rules and norms can be costly to co-operators in terms of their personal relationships, status, time commitments and financial expenses. Those in enforcement roles must accept the costs of their actions and see value in the potential rewards. High cooperation costs are a potential disincentive that can easily allow a 'cooperator's dilemma' to undermine collective action around the shared resource (Lichbach, 1996).

In contrast to earlier theoretical prescriptions that favour certain measurable communal conditions or institutional 'blueprints' to predict collective action (see the frameworks described by Ostrom, 1990 and Agrawal, 2001), more recent theories acknowledge that formalised and highly structured rules and penalty mechanisms can be costly to enact and cumbersome for some communities to fit into social practice (Cleaver, 2012). Such systems often evolve into less explicit forms, or appear to fade into disuse (Cleaver, 2001a). However, systems of regulation and associated penalties often remain prevalent in the form of nuanced and customary 'rules-in-use' that some small, resource-sharing communities develop in order to manage common property (Cleaver, 2001b; Nkonya, 2008). The result may be less overtly structured rules and appeals to conduct that are contextually appropriate, dynamic and a lower-cost, first level approach to managing collective action (Ostrom, 2005; Nkonya, 2008; van Laerhoven, 2010; Yami et al., 2011).

The research described in this paper examined communal management in five Malawian villages that have cooperated to manage and maintain communal water hand pumps for 10 or more years while many other similar villages fail at this. Many rural Malawian villages rely solely upon donated hand pumps fitted to boreholes or covered wells as their only access to safe drinking water. The problems associated with accessing clean water are intensifying, and the number of sub-Saharan Africans living in structural water scarcity is estimated to increase (Brown and Crawford, 2009; Pearson et al., 2015; Jemmali, 2018).

Understanding how some communities practice shared-resource rule enforcement and sanctioning in order to maintain donated hand pumps is important for governments and donors who provide this kind of infrastructure.

THE VALUE OF COOPERATIVE MANAGEMENT AND INSTITUTIONAL RESEARCH

The predominant approach when it comes to addressing water supply problems in much of rural Africa has been for governments and donors to sink boreholes or covered wells in villages. These are often fitted with low-cost, simple technology hand pumps, such as the ubiquitous 'Afridev' model. These interventions are premised on the Village Level Operation and Maintenance (VLOM) approach – the notion that small rural communities will have the financial and skills capacities to maintain and repair technically simple units if they are given ownership of them (Colin, 1999; Batchelor et al., 2000). Unfortunately, more than half of these projects have been known to fail when the hand pump breaks down and remains in disrepair, forcing users to revert to previous unsafe water sources (Harvey and Reed, 2006b; Skinner, 2009). The reasons for this phenomenon are legion – poor availability of water pump spare parts (Harvey and Reed, 2006b), poor project implementation (Blaikie, 2006; Harvey and Reed, 2006a; Cleaver 2007), community apathy (Cleaver, 2001b; Plateau, 2008), gender role barriers and user group conflicts (Nkonya, 2008; Crow et al., 2009), village mobility, skill level and community wealth (Harvey and Reed, 2006a; Araral, 2008).

While a focus on 'hardware solutions' that address spare parts, design, materials and markets is important, any improvements in project success rates will require a more thorough understanding of demand management, collective action and social factors affecting community water point management in villages that rely on VLOM approaches (Brooks, 2002; Sugden, 2003; Watson, 2003; Summers, 2005; Perret, 2006; Jemmali, 2018). Beyene (2009: 175) advises that "better knowledge of the role of norms and other factors affecting collective action in water point management is essential to development agencies who would like to strengthen community based institutions...".

This is important to note, since many VLOM-based projects involve the development of a formal authority group responsible for the new well and pump, usually through the establishment of a Water Point Committee (WPC) (Njalam'mano, 2007). It is the WPC structure that is intended to institutionalise the monitoring of hand pump use, the enforcement of clear constitutional rules, adherence to collective maintenance duties and the issuing of penalties to any free riders or rule breakers (Colin,

1999). The imposition of these exogenous institutions by external organisations has been found to overlook, ignore or erode pre-existing local institutions and customary laws that govern collective action around water (van Koppen et al., 2007; Watkins et al., 2012). If VLOM is to be successful, it requires the cooperation of a community that can apply acceptable social norms that fit into their lives (Batchelor et al., 2000; Swidler, 2013).

Cleaver (2002) argues that successful, local, VLOM-type institutions are largely contextual, diverse, ad hoc and, to a certain extent, under constant re-negotiation. These 'informal institutions' tend not to be explicit or outlined in highly structured conventions or constitutions (de Soysa and Jutting, 2007). They can remain invisible or misinterpreted – too often ignored or glossed over in development research (Njoh, 2011; Chambers, 2008).

More recent efforts have come to view collective action 'blueprint' prescriptions (see Ostrom, 1990; Wade, 1998; Agrawal, 2001) as only partly useful, giving more currency to flexible norms around rules and punishments (Henrich and Boyd, 2001; Fehr, 2004; Kiyonari and Barclay, 2008). Bastakoti and Shivakoti (2012) and Nemarundwe and Kozanayi (2003) recognise that without unpacking these informal, 'unwritten' rules, attempts at researching collective action institutions are incomplete, as these diverse, contextual rules-in-use can have significant effects on collective action.

There is a practical and theoretical need for investigation into the informal components of rule adherence and the interactions between formal and informal institutions in development research (de Soysa and Jutting, 2007; Smajgl, 2007). We have developed valuable insights into rules and punishment in social dilemmas outside of experimental models (Vyrastekova and van Soest, 2008), using village-level empirical case studies. This is necessary in order to understand some of the complexity of collective action and the 'thick model' of institutionalism that addresses agency, relationships and norms (Sanginga et al., 2007; Gibson et al., 2005; Beyene, 2009 and Cleaver, 2007, 2012).

RULES, SANCTIONS AND COLLECTIVE ACTION

Rules, rule enforcement and punishment for rule breaking are the cornerstones of successful collective action institutions for shared resources (Agrawal, 2001; Ostrom, 2005; Sefton et al., 2007; Chen et al., 2009). When faced with a public goods dilemma and the collective burden of free riding, rules provide valid motives for structuring behaviour and lend credibility to the use of penalties to support these rules (Thomas et al., 1986; Sefton et al., 2007). In the absence of rules, and penalties for breaking them, evidence shows that collective action and cooperation typically give way to non-compliance and selfish behaviour (Tullberg, 2006; Sefton et al., 2007; Vyrastekova and van Soest, 2008; Chen et al., 2009). On-going rule negotiations and enforcement result in improved conditions of shared resources (Gibson et al., 2005; Yami et al., 2011).

The challenge with analysing the effectiveness of rules can be found in the difference between those that are 'formal' – explicit and structured rules found in constitutions and contracts – and those that are more 'informal' – ad hoc rules appearing malleable or negotiable in different contexts and for different actors, and often less obvious in their application (see North, 1990). Bratton (2007) warns against using strict 'constitutionalism' when attempting to understand social institutions, pointing out that an overly structured approach to social organisation belies the value of informal rule and the development of sanction mechanisms within social interactions. Ostrom (2000, 2005) demonstrated an evolution of collective action theory which recognises the nuance of dynamic, informal rules. Cleaver (2001b, 2012) incorporates adaptive rulemaking as part of 'institutional bricolage' that borrows and moulds conventions of conduct from pre-existing norms in a manner that is appropriate within the context. Zulu (2008) and Yami et al. (2011) found that written contracts and strict, rules-based constitutions did not necessarily favour effective collective action outcomes in village settings. Resource management institutions 'live' and evolve socially through negotiation by those who act within them (Cleaver, 2012).

BACKGROUND AND RESEARCH CASES

Approximately 85% of the thirteen million plus population of Malawi are located in rural areas (Ministry of Irrigation and Water Development, 2008). While country-specific statistics vary across sources it is estimated that approximately 57% of the rural population have access to reliable water sources (WaterAid, 2010) with 54% relying on boreholes (MIWD, 2008). According to Ferguson and Mulwafu (2004), this coverage is reduced to as little as 32% due to infrastructure breakdown.

Primary research was conducted in five rural case study villages in central Malawi (see Table 1).

Table1. Case-study villages.

Village Name	Tribal Authority Area	Occupied Households	No. of research Interviews	No. of pumps	Pump Notes
Machilika	Chadza	28	19	1 Afridev on a borehole	Pump supplied in 1996
Kalonga	Mazengera	69	13	2 Afridev's, one on a covered well, one on a borehole.	Covered well pump supplied 1996, second borehole pump in 1997. Second pump non-functional – parts taken by village to repair the first pump and borehole casing subsequently vandalised.
Mazinga	Chiseka	65	13	1 Afridev on a borehole.	Supplied in 1998.
Chimphanga	Kwambiri	30	19	1 Afridev on a borehole	Supplied in 1996
Makumba	Jalasi	31	6	1 Afridev	Supplied in 2000.

The research did not offer explicit comparisons to villages with failed pump maintenance, nor to villages that had used their own funds to purchase pumps. While these are important aspects, the research focused solely on cases of successfully maintained and managed pumps that had been donated. Given that failures in the maintenance of donated pumps are common, the conditions and institutions that favour successful maintenance were of particular interest to the authors, and, in our opinion, warranted investigation to gain insights into how certain villages managed to achieve this autonomously.

METHODOLOGY

The first step of case selection entailed using a combination of 2008 Government of Malawi survey data on borehole functionality along with recommendations from partners at Bunda College of Agriculture. Visits were made to shortlisted villages in central Malawi that satisfied three criteria: 1) they had an Afridev pump, 2) the pump was supplied by a donor organisation and 3) the pump had functioned without a breakdown lasting longer than two weeks for at least 10 years. During these visits information could be gathered about other local cases of well-maintained and long-lived Afridev

pumps, as well as insights into why many villages had pump maintenance problems. The research team visited 61 villages during this process, from which five case studies of those satisfying the criteria above were selected. From observations during the visits the villages selected all appeared to be clearly bounded and established communities by local norms (of course the notion of 'community' may extend well beyond the village boundaries). The case study villages were not observably unusual for a 'typical' village in central Malawi.

The primary research comprised the five case studies. Information collection primarily took place through semi-structured interviews (70 dyadic and group interviews) conducted in the native ChiChewa and ChiYawo languages by bilingual Malawian research assistants. The researchers spent the first few days in each village informing the community of their work, beginning initial observations and formulating future probing interview questions. This allowed the team to begin building descriptions of the social structures and issues surrounding the management of the hand pump. Group interviews were typically conducted with naturally assembled groups, quite often women going about their daily duties or taking work breaks – a method that can, and did, create favourable interview conditions (Gomm, 2008; Nkonya, 2008). The research adopted an iterative approach of progressive focusing, where research questions were honed or changed with each iteration of interviewing, observation and community familiarity over repeated visits to each village (Gomm, 2008; Yin, 2009; Stake, 1995; Singleton and Straits, 2010). The research aimed to uncover nuances relating to social structures, village institutions, labour and monetary contributions, relations with neighbours and collective action around other communal issues and activities, rather than forcing our explanations to conform to pre-figured theoretical assumptions (Merriam, 1998).

At the end of the research period 192 structured household surveys were conducted with the head of the household or their spouse in four of the five case villages to measure socio-demographic and livelihood data (logistical challenges that arose in the region precluded surveying the fifth). These data were predominately focused on information about livelihoods, but some questions also investigated collective action regarding the management of the hand pump.

Cooperative institutions were examined across the five cases and the patterns of rule enforcement common to each were considered. This was chosen as a means of ruling out a particular anomalous case. Although considered as individual cases, these villages were investigated for the shared social norms that helped sustain village-level pump maintenance. The household surveys conducted in the four sample villages elicited similar responses to certain preference questions. Table 2 highlights the responses to a stated preference question. Household heads were asked whether, in the event of a pump breakdown, they would prefer the pump to be repaired or one of a series of 10 alternatives:

Option 7 indicates a strong willingness by respondents to be involved with training and stewardship regarding the repairing of the pump. Kalonga and Mazinga rank lower in this question. These villages were larger than the other two surveyed and had greater variation in the opinions on pump management. Kalonga also had a smaller core of pump stewards assuming more responsibility for maintenance (see section below on leadership). Mazinga benefited from having two other hand pumps in two nearby villages on which they said they could rely for short periods if theirs broke down.

The majority of household heads (or spouses) in these four villages were satisfied with communal hand pump management and maintenance, indicating the likelihood that these respondents were satisfied with cooperative norms in the villages.

Table 2. Responses (% of household heads or spouse) when asked "if the pump was broken and you had the choice of repairing the pump or..."

	Chimphanga		Machilika		Kalonga		Mazinga	
	Repaired pump	Alternative option	Repaired pump	Alternative option	Repaired pump	Alternative option	Repaired pump	Alternative option
1. Gule Wamkulu dancers for ceremony	100	0	100	0	88	12	98	2
2. Irrigation furrows for gardens	100	0	82	18	87	13	98	2
3. New clothes	90	10	89	11	84	16	89	11
4. Fertiliser	83	17	64	36	40	60	58	42
5. A goat	93	7	82	18	68	32	80	20
6. Medicine to prevent malaria	97	3	100	0	96	4	98	2
7. Training in water pump maintenance	34	66	36	64	68	32	51	49
8. More shallow-water wells	100	0	93	7	99	1	97	3
9. Abandon the broken pump	100	0	100	0	100	0	100	0
10. A chicken	100	1	89	11	87	13	94	6

Table 3. Level of satisfaction (% of household heads or spouses) when asked: Are you happy with the way the pump is managed in the village?"

	Chimphanga	Machilika	Kalonga	Mazinga
Very Happy	97	82	70	95
Moderately	3	14	16	3
Unhappy	0	4	14	2

FORMAL RULES VS. AD HOC 'RULES-IN-USE' IN MALAWI

In all five of the case-study villages participants initially referred to a strict set of rules regarding the use of shared hand pumps. Most of these pertained to user conduct, maintenance and cleaning schedules and, most significantly, strict obligations for financial contributions towards repair and maintenance. Participants initially stated that these rules were enforced strictly, swiftly and explicitly by the village Water Point Committee (WPC). Such committee structures are typically introduced by the donors that supplied the hand pumps, who then conduct training for the village as part of the VLOM strategy. What became clear from all the case-study villages was that the nature of the WPC's had changed. Their

structure and the way they functioned had become very different from their original incarnation, or they were defunct.

Alignment was found between the evolution of the WPCs' operations and changes in regulations, monitoring and rule enforcement, and this is considered here to be a proxy measurement for the differences between official rules and rules-in-use. Indeed, the discrepancies between the rules as stated and as applied by monitoring institutions were evident in the inconsistent responses given to a specific household survey question. Respondents were asked 1) 'Does your village have an active borehole committee?' and 2) 'Has anyone in this household ever been denied access to the pump for breaking rules or not contributing?' The results in Table 2 show that in the two villages with weak or no longer official committees some respondents still stated that there was an active committee, bringing into question the communal understanding of and involvement with formal institutions. The apparent confusion may be due to village leaders and entrepreneurs having taken the initiative with regard to the management of the hand pump, thereby becoming, by default, an informal, committee-like group in the eyes of their community. In other words, the notion of a 'committee' had seemingly changed to reflect those 'entrepreneurial' village leaders who had assumed greater responsibility for the pump and become a quasi WPC. The group was still called a 'committee' but no longer resembled the previous elected or appointed structure. (An alternative explanation could be that the respondents were answering 'strategically' – aiming to appease the outsiders, who, understandably, can be perceived as a potential source of further material assistance¹). Kalonga Village, for example, had no committee in place and relied on a handful of local 'entrepreneurial' leaders and the chief to sustain its hand pump. It is assumed that this leadership core was seen by many to be the 'committee' even though there had not been a formal WPC in that village for some years. The same was true in Machilika, although this village had more intrinsic volunteerism and informal leadership. Their official WPC had become inactive fairly recently, but many of its former members still volunteered as leaders interested in managing the borehole and hand pump.

The two other villages, Mazinga and Chiphanga, still had WPCs with structure resembling those established in VLOM projects, including job titles. Yet they had both undergone transformations that departed from the organisational templates offered by the NGOs when the hand pumps were first supplied. The changes were largely the result of original members having left, lost interest or resigned due to social conflicts. Their replacements were more inclined to lead on specific tasks related to water point management. Further, with the changing membership, the institutions evolved towards local cultural practices, just as had occurred in the other villages. This resulted in a blend of imported and local institutional practices, although the former mainly involved the retention of job titles.

THE VALUE OF LEADERSHIP

Successful collective action requires a number of social factors to motivate and maintain cooperation around shared resources (Ostrom, 1990 and Agrawal, 2001). These include the means of enforcing rules and issuing penalties, and we have attempted to examine these important, complementary elements in isolation. The social cohesion that underpins informal enforcement and sanctioning works in concert with, and is augmented by, both formal and informal leaders (Swidler, 2013; Zulu, 2008), and it should be noted that leadership played an important role in all five case studies (Joubert, 2014).

There are often groups within cooperative communities who accept elevated costs related to monitoring, enforcement and the issuing of penalties. Together with those willing to assume repair duties, these groups evolve organically to become informal 'task leaders' (Earl, 2007). Their function is reciprocal with the formal leadership, such as village chiefs, who play an important cultural role.

¹ This phenomenon often confounds development research (Chambers, 2008).

Leaders also help to underpin and support cooperative behaviour, moral appeals to norms and threats of punishment to free riders. We acknowledge the importance of leadership here, although it is not given full treatment in this paper.

THE EVOLUTION OF RULES AND PENALTY PROCESSES

Most villagers gave similar examples of the explicit rules governing their pump. For example, if a woman failed to conduct her scheduled cleaning of the hand pump area she would be immediately reported to the borehole committee, chief or person officially mandated with managing the cleaning roster. All the villages also required periodic household monetary contributions to pump maintenance (with certain exceptions). Participants initially stated that those failing to contribute the set amount to communal repair coffers during a breakdown would be barred from using the pump after a grace period of normally one to two weeks to find the funds. Yet, when queried on the rates of exclusion from the pump it became evident in the four surveyed villages that these were very low (see Table 2); this was also evident from interviews. The rules as stated stood in contrast to more common accounts of people not managing to contribute within the set time periods. The high rate of pump exclusions in the small village of Machilika stems from the vociferous nature of some of the elderly women who steward the hand pump. Being a small village they are vigilant around the borehole area and are quick to approach any members who try to sneak water without paying dues or when they miss their periodic labour contributions. The exclusions themselves are seldom formal, more often entailing younger women being scolded at the pump site by their seniors and told to 'go home and get water elsewhere until you contribute', although rarely actually having to leave empty handed. The 'bars' were in name only – the perpetrators having to show remorse and acknowledge having broken a rule. Thus, such penalties should be seen, in essence, as verbal warnings, where an actual barring from the water supply would be reserved for more serious or repeated problems.

Table 4. Inconsistencies in evidence of formal committee structures as well as rates of application of the ubiquitous 'bar rules'

Responses:	"Does the village have an active borehole committee?"		Evidence of borehole/WPC committee in village	"Has anyone in your household ever been denied access to the pump?"	
	Yes	No		Yes	No
Chimphanga	28 (96.5%)	1 (3.5%)	Functional, active committee	1 (3.3%)	29 (96.7%)
Kalonga	22 (32.4%)	46 (67.6%)	Not active, only some ex-committee members still in the village	1 (1.5%)	67 (98.5%)
Machilika	7 (25.0%)	21 (75.0%)	No, committee faded from duty in 2007	11 (39.2%)	17 (60.8%)
Mazinga	63 (98.4%)	1 (1.6%)	Functional active committee	5 (7.7%)	60 (92.3%)

After the initial interviews and observations it became clear that much of the rule enforcement and penalties that were claimed to be in place were not being applied. Some common rules, for example no washing or children playing unsupervised close to the pump, seemed to be frequently ignored. As better trust was established with the communities many participants confessed that strict adherence to

formal regulations was in fact a rare phenomenon. Perhaps the most serious penalty was the banning of access to those failing to pay their contribution towards the repair or maintenance of the pump. In all five cases we were initially assured that the failure to contribute resulted in straightforward barring, but it became evident that this punishment seldom materialised. To an outsider it may appear that there has been an erosion or total failure of the constitutional rules and punitive systems. However, these villages still managed to sustain their commonly owned hand pumps through varying levels of collective action and cooperation. This phenomenon represents an important focus point for collective action theory and development research.

In the village of Chimphanga it was explained that severe punishment was rare, even though people do break rules and free ride. This woman, like many others, stated that punishments typically take the form of warnings by other village members, usually during daily interactions:

Q: Do you give any punishment? [to offenders]

A: Punishments are given in isolated incidents but normally we just warn them.

Another Chimphanga participant pointed out that while leniency is the norm rule-abiding members can opt for more severity towards offenders if they so choose, for example if the offenders fail to show remorse or do not attempt to rectify their offences. The co-operators in the community seldom felt the need to resort to more onerous processes but reserved the option:

Yes they still use it [the hand pump after not contributing to repair funds], but of course they keep reminding them. They will just continue, but if women decide to start talking at the meeting that's when things will really turn ugly for those who didn't pay their contributions.

In many cases it was reported that free riders would be dealt with in situ, by other villagers, without resorting to formal proceedings or reporting to committees (where they exist) or leaders. These participants concur that in situ peer-group or family discipline is the norm. In the village of Makumba a woman explained that when free riders face disciplinary proceedings even the formal leadership applies the least severe and lowest – cost penalties first.

There are many issues that will be sorted right at the borehole. There are also certain issues that will be taken to the committee, but if the committee fails to handle certain issues then they would go to the chief for assistance.

A man from Mazinga echoed the prevalence of in situ discipline:

If someone has broken the rules, we go to his/her house and talk to them and everything ends there after talking to them.

It became evident that rules were commonly enforced in ad hoc and creative ways, and that offences were judged on a case-by-case basis. The appeal to norms and morals was another lower-cost means of institutionalising rule adherence.

MORAL APPEALS VS. RULE ENFORCEMENT AS INCENTIVE

In addition to the threat of rule enforcement, moral appeals to the public good were frequently used to encourage cooperation. Those who didn't make their monetary contributions were asked to reciprocate the cooperation of others and 'do the right thing' for the common good, as this participant explained:

Q: What can you say to someone who does not want to pay their contribution?

A: I think the best thing is to sit down with this person and explain to him the importance of using the borehole water rather than the water from the unprotected wells, and other is that I would explain to this person the importance of working as a group.

These moral appeals employ the critical mass of the cooperative majority to legitimise conforming with 'pro-development' and cooperative behaviour as a social norm (Callero, 2009). This was also closely related to the use of threats of disciplinary warnings, the potential of which was closely tied to the legitimacy of the rules-in-use. When collective working rules and conventions are evidently well entrenched in the community such warnings could be underwritten by these institutions by virtue of their social currency in the community. Feinberg et al. (2012: 380) remind us that "a collective moral order does not presuppose consensus or uniformity of belief; it does presuppose that there is a known institutionalised order within the collective".

Interviewees often explained that non-contributors were called out and labelled as 'anti-development' – a way to publicly embarrass and thereby motivate them to comply with the 'pro-development' collective institutional order. Thus, being singled out as 'anti-development' was an advanced form of moral appeal and penalty by embarrassment. Rather than part of a formal constitution or disciplinary process it was an informal institution leveraging behavioural norms. These two women, from Machilika and Mazinga villages, explained that some people would always try to free ride. Instead of incurring significant costs by punishing them the village would appeal to their sense of communal duty and simply leave them as free riders until they personally undertook to pay their way:

They might even stop using the borehole because of the village pressuring them, but when such things happen [flouting rules], we don't bother at all, because what we say is that such kinds of people are against development.

Yes, we don't back them up, because we know that they are against development. They would go to the [open] wells to fetch water.

Informal institutions allow effective, low-cost systems of monitoring and regulation, and motivate development within these villages. The evolution of tacit institutions may indicate strong collective norms despite the absence of more formal sanction systems (Cleaver, 2012).

Moral appeals were often framed through the discomfort of embarrassment. An approach used in all five case-study villages was to hold village meetings shortly after contributions were required, or to have a volunteer at the pump to warden the free riders and inform people who they were. The names of those who had paid their contributions to the hand pump repair fund would be announced while the free riders' names were omitted. Causing such embarrassment (except to those who were exempt from contributions, like such as the old and infirm) was a common approach, as explained by these participants from different villages:

Chimphanga Village: ...yes, after people have paid the money, they call a meeting where the committee and everyone are present to announce the names of those that have paid. This is done right at the borehole. Everybody sits there and the names are announced. The main reason for gathering people and announcing names is to make sure that everyone has an idea of who has paid and who hasn't, and they also want people to know how much money there is.

Machilika Village: ...the names of those who have paid are written in the notebook and the chief will announce that there are some people who have not made the contributions. The names are announced so that we all know those have not paid.

Acknowledgment of the 'embarrassment' was evident in all five case studies and was typified by statements such as these:

Mazinga Village: ...if you are one of them [who have not yet paid the maintenance contribution], you will not even dare to come close [to the borehole] or you risk being embarrassed.

Makumba Village: [When asked whether a free rider will eventually pay when the whole village knows they have not yet contributed to communal pump repair fund]: It doesn't take that long; actually people feel embarrassed.

The Mazinga participant indicates that the embarrassment is possibly worse than not being able to enjoy the pump's health and labour benefits. Therefore, the use of embarrassment is a useful first step in keeping the costs of penalties low and applying punishments in a contextually appropriate manner. Feinberg et al. (2011) found that using embarrassment for indiscretions helps to restore social order and is a pro-social marker: those who are embarrassed at not having cooperated tend to be seen as more likeable and trustworthy and are more likely to be forgiven. Most people are sensitive to public disapproval and hence motivated to maintain a positive image (Kiyonari and Barclay, 2008). This participant corroborated the concept:

Those people [non-contributors] don't even dare to come and fetch water from the borehole. They are too shy to be seen.

Since avoiding embarrassment can induce cooperative behaviour, the use of public embarrassment, as in the case study villages, augments moral appeals to 'doing the right thing' by virtue of a critical mass of those who are cooperating implicitly enforcing the preferred norm on a minority who may attempt to free ride.

Being able to threaten graver punitive action, for example barring someone from using the pump, can also deter offenders. As Kiyonari and Barclay (2008: 826) state, "the threat or promise of higher order sanctions might maintain the lower order sanctions that enforce cooperation in collective action problems".

PERPETUATING LOWER-COST, 'INFORMAL' ENFORCEMENT AND PUNISHMENT

The costs associated with monitoring and the issuing of punishments can be so high that contributors and rule enforcers are dissuaded from penalising non-contributors and free riders (Tullberg, 2006; Kiyonari and Barclay, 2008). The potential cost of structured rules and punishments can provide a perverse incentive for second-order free riding. This is a common collective-action dilemma when only a small minority of those cooperating carry the extra enforcement costs while the rest do not (Tullberg, 2006; Kiyonari and Barclay, 2008; Heckathorn, 1989). Chen et al. (2009) found that severe, high-social-cost punishments can actually impede successful collective action since they tend only to motivate people artificially in the short term. Keeping enforcement and disciplinary costs lower can increase the willingness of those in the cooperative to undertake day-to-day rule enforcement through their personal relationships and social interactions. Lower costs alleviate marginal costs for all members of the cooperative willing to engage in the regulatory system. As the costs of enforcement decline the rate of intrinsic cooperation often increases as the users of a resource will emerge as default rule enforcers (Gibson et al., 2005).

Thomas et al. (1986) posit that cultural forces against cheating can be pervasive. The prevailing manner in which rule breakers were dealt with informally in the case-study villages supports the notion that collective action may be the result of on-going negotiations over communal conventions and low, perpetual transaction costs for rule enforcement (Cleaver, 1998). Sanginga et al. (2007) argue that on-going negotiations around rules and norms serve to drive cooperation rather than impede it. Finding appropriate mechanisms of punishment and reward is crucial in the context of social learning (Vollan, 2011). These forms of collective action may work towards an ideal situation where people are motivated to cooperate intrinsically: "if an individual believes that others are contributing because of

certain contextual factors, they are likely to infer that individuals will not contribute in the absence of those factors. If, on the other hand, they believe that others are contributing because of intrinsic factors, they will have stable expectations of the others' contributions regardless of the presence or absence of the contextual factors" (Chen et al., 2009: 244). This aligns with the findings of this research where free riders were sometimes left to their own devices until they acquiesced to the village norm of acting collectively with other hand-pump users. Gibson et al. (2005) also report communal acceptance of the transgressors of formal rules in many cases, where informal institutions had emerged to modify the pre-existing laws into a more appropriate manner of organising cooperation. New rules-in-use allow certain formal 'constitutional rules' to be explicitly broken, but the context of the transgression determines whether or not the cost of the penalty is appropriate.

BENEFITS OF LOW-CONSEQUENCE PUNISHMENT

Lowering the cost of punishment is an effective means of ensuring longer-lived collective action. Severe punishment can cause long-term social antagonism towards the enforcer and exacerbate anti-social relations in small communities (Kiyonari and Barclay, 2008). These authors also found that verbal reward was often preferred as a means of sustaining the will to act collectively and maintaining reciprocity for adhering to moral appeals. In the case-study villages announcing of the names of those contributing readily to water pumps was just such a means of rewarding cooperation while penalising free riders.

Notwithstanding the aforementioned risks associated with severe formal punishment, some degree of penalty is very valuable. Sefton et al. (2007) found that the rate at which players are likely to give up rewarding people is faster than the rate at which they will persist in punishing non-contributors. Penalties must be issued but in the correct balance. The authorities should impose penalties quietly and without seeming too harsh, such as those in the villages who would 'talk to the offenders in private' and enforce rules informally. By acting in this way they can demonstrate their trustworthiness as leaders who are willing to incur a degree of personal cost without passing a tipping point of incurring excessive communal costs (Kiyonari and Barclay, 2008; Volla, 2011). Trust can also be eroded when severe punishments are meted out; conversely, rates of sustained cooperation can be found where levels of communal trust are high (Chen et al., 2009). In some communities it was not rare for a member of the collective to be allowed to free ride with impunity. For example, a woman in Machilika explained how an inhabitant was constantly opposing cooperation. Formal punishment was seen as too costly and ineffective:

Q How do you handle them when they come back? [when they keep using the pump despite not contributing to the maintenance]

A We just look at them; there is nothing we can really do.

Q Is it difficult to confront them?

A Yes, it is quite difficult.

Q Wouldn't the village headman confront them instead?

A It is even difficult for him to confront them; he would look as if he is being harsh to his people.

Punishing these free riders was seen as too personally costly and the defector was left – hopefully to come to cooperate through exposure to the collective majority and day-to-day personal interactions. The lower-cost informal penalty systems can have the added benefit of fostering community trust and lowering overall rates of conflict even where transgressions persist.

IMPLICATIONS FOR DEVELOPMENT PLANNING AND VLOM STRATEGIES

Development planners should be aware that rules, sanctions and associated penalties can prove highly successful and effective even where they do not appear to be explicit or to follow a strict set of formalised constitutional rules. These 'unseen' or ad hoc institutions for rule enforcement can be easily overlooked, although they are in themselves indicators of social cooperation (Ostrom et al., 1994; Cleaver, 2001b; Blaikie, 2006). Gibson et al. (2005) remind us that rule enforcement is a strong predictor for the condition of a shared resource, regardless of whether that enforcement conforms to strict organisation, and that the way in which penalties are issued is often unpredictable and seldom follows an obvious path or clear blueprint. Planners should also consider the changes to communities that may accompany the donation of new infrastructure, such as wells, boreholes and pumps. For the recipients of development assistance, endeavouring to understand local norms of rule adherence and the costs of village enforcement may be equally important. Understanding that their preferred sanctioning norms may be low level and nuanced can help when designing management systems that are more likely to persist, even if some free-riding occurs.

If development planners help to craft communal management institutions, such as water point committees, they need to be cautious of excessive 'technical interference' outcomes (Vollan, 2011; Yami et al., 2011; Gibson et al., 2005; Watkins et al., 2012; van Laerhoven, 2010) and aim to foster collective rule making and enforcement that happens in the ebb-and-flow of daily life (Cleaver, 2001b; Nkonya, 2008). Cinner et al. (2009: 495) warn that, "some of these design principles may not be appropriate in a specific local context and should not be 'forced' on local institutions".

The use of ad hoc suasion to institutionalise cooperation may seem superficially like a failure to uphold rules, especially when there is persistent free riding by some. However, it is an approach that can have longer-term benefits through lowered social costs for the majority and willingness to accept eventual cooperation by the offenders as opposed to short-term cooperation through more onerous and less empathetic means (Beyene, 2009). It should be expected that externally imposed management structures will change or perhaps even be replaced by an alternative that may not be immediately evident.

In addition to corresponding better to community life, informal rules and penalties suffer less from the actor mobility that was common in the case-study villages. Rigid structures, such as committees, might experience periodic shocks when nominated actors leave, for example to pursue migrant labour opportunities or due to disagreements. Indeed, the WPCs of both Kalonga and Machilika villages became defunct due to dwindling membership.

Development planners would do well to promote means that foster on-going negotiation and the evolution of rules-in-use and behavioural norms in order that they become institutionalised (Cleaver, 1998). This may involve the planners spending more time in communities and engaging in informal processes of engagement themselves, thus identifying emergent leaders and interested individuals with whom to share knowledge and who could then make use themselves of existing informal structures of institution building. Further, development planners should avoid presuming that if the formal committee is no longer functioning, it is a failed outcome. The emphasis should be on whether existing institutions are achieving the desired outcomes of a well-maintained pump and borehole.

CONCLUSION

VLOM-based rural development projects are predicated on the notion that communities receiving vital infrastructure, such as hand pumps for clean water, will develop a sense of ownership that will motivate collective action for its maintenance. Assistance with this often comes in the form of externally crafted social institutions bundled into the concept of the 'water point committee' that is intended to operationalise rules and penalties, and provide capacity for collective action (Batchelor et

al., 2000). Ironically, evidence shows that assuming ownership may be less likely when these new institutions structure social life in a manner that reinforces the project as 'someone else's' (Njoh, 2011).

The research presented here found that important collective action institutions in villages that were successfully maintaining their donated hand pumps had evolved into a form that no longer followed strict regulation or conduct protocols. Firstly, formal rules, enforcement and sanction institutions did not persist in stasis. Rather they evolved to include different forms of organisation or were completely replaced. Secondly, while rules of conduct and their enforcement were in evidence they were seldom applied rigorously. Instead, rules were balanced by relevant social or agent costs, and moral considerations. Such considerations were negotiated frequently and often in the ebb-and-flow of peoples' daily social interactions. Thirdly, penalties for failing to cooperate were regularly applied in informal, low-cost ways, most often through relational means. The use of moral normative claims was widespread as a means of reducing costs, entrenching intrinsic collective behaviour and avoiding unnecessary conflict.

Finding the appropriate disciplinary measures to reward those who cooperate and punish free riders without excessive severity may be one of the keys to sustaining collective action in the long term by encouraging people to 'do the right thing'.

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